Auberry, K., Wills, K., Shaver, C. (2017). Improving medication practices for persons with intellectual and developmental disability: Educating direct support staff using simulation, debriefing, and reflection. ***Journal of Intellectual Disabilities 1-14.***

Improving medication practices for persons with intellectual and developmental disability: Educating direct support staff using simulation, debriefing, and reflection

Abstract

Direct support professionals (DSP) are increasingly active in medication administration for people with intellectual and developmental disabilities (IDD), thus supplementing nursing and family caretakers. Providing workplace training of DSPs is often the duty of nursing personnel. This article presents empirical data and design suggestions for including simulations, debriefing, and written reflective practice during in-service training for DSPs in order to improve DSPs' skills and confidence related to medication administration. *Quantitative* study results demonstrate that DSPs acknowledge that their skill-level and confidence rose significantly after hands-on simulations. The skill- level effect was statistically significant for general medication management -4.5 ($p < 0.001$) and gastrointestinal medication management -4.4 ($p < 0.001$). *Qualitative* findings show a deep desire by DSPs to not just be "pill poppers" but to understand the medical processes, causalities, and consequences of their medication administration. On the basis of our results, the authors make recommendations regarding how to combine DSP workplace simulations and debriefing with written reflective practice in DSP continuing education.

Key Words: Intellectual disability, developmental disability, direct support professional, simulation, debriefing, reflection, medication management

Corresponding author:
Kathy Auberry, IU School of Nursing at IUPUC, Columbus, IN, USA
Email: kauberry@iupuc.edu

Introduction

Over the last few decades, the transition of persons with intellectual and developmental disabilities (IDD) out of large institutions and into community settings, has led to the enhanced role of the direct support professional (DSP). Included in this heightened role is the substantial responsibility of medication administration. It is estimated that there are 3.6 million direct care workers in the United States today. Of this 3.6 million a large number are Direct Support

Professionals (DSPs) working in community based settings (Center for Medicaid and Medicare Services, 2013). It is estimated that by the year 2020 the need for DSPs will exceed 1,197, 000 in community based IDD settings (United States Department of Health and Human Services, 2006).

The role of the DSP is extensive and can include; providing direct care, administering medications and treatments, implementing behavior plans, and assisting each person with IDD to achieve the highest level of independence (Indiana Bureau of Developmental Disabilities, 2011). Each experience is unique because it requires the DSP to support each individual according to their need and situational context (American Association on Intellectual and Developmental Disabilities, 2016). In general, qualifications to be employed as a DSP include being eighteen years of age with a high-school graduate or equivalent, a clear background check, hold a valid driver's license, and be free of communicable diseases, though certification requirements may vary by state. The professionalization of DSPs' labor is evidenced by the creation of the National Alliance for Direct Support Professionals (NADSP).

The National Alliance for Direct Support Professionals (NADSP) is a national organization that supports clinical training for DSPs. One of the defined DSP competencies identified by NADSP is the accurate administration of medications in accordance with best practice and agency policy and procedure (NADSP, n.d.). While the NADSP supports DSP training and provides certification for training, simulation, debriefing, and reflection are not core competencies

Career pathways and education for DSPs are varied in the United States and dependent on the state in which the DSP provides service. Most training is based on individual State requirements and not focused on competency attainment (Center for Medicaid and Medicare Services, 2013). Currently, there is no United States federal mandate that requires DSPs to

receive a singular, comprehensive, competency based, training. This situation is not unique to the United States. Wark, Hussain, & Edwards (2014) report that education for DSPs along with services for persons with IDD in Australia and other countries, are often complicated by layers of government that prevent successful implementation of policies and procedures for this workforce.

The State of Indiana in the United States is an example of the diverse requirements. In the State of Indiana, DSPs must receive certification in the State mandated curriculum: Medication Administration: Living in the Community (Pershing, 2004). While this curriculum does provide an overview of medication administration, it does not provide opportunities for simulation, debriefing, and reflection. Simulation is restricted to the return demonstration of passing an oral tablet and an oral liquid. Return demonstration requires the DSP to complete a simulated medication pass back to the nurse trainer using correct technique. The curriculum does not offer opportunities for simulation in other areas of medication administration such as gastro-intestinal medication administration, or insulin pen injections.

While the number of persons with IDD increases within the community, it is further complicated by the aging of this population (Wark, Hussain, & Edwards, 2014). With this increase in aging comes age-related disorders and diseases. The unique and oftentimes complex medical diagnoses of persons with IDD is compounded by ageing and may require intricate medication management practices. However, Wark et.al report that DSP training has failed to address the ageing issues necessary to meet the needs of this population.

To summarize, the increase in numbers of persons with IDD in the community, the increased life expectancy of this population, and the lack of standardized training requirements for DSPs, attests to the need for exploring pedagogical practices that meet the growing demand

for DSPs to administer medications of a complex nature. The purpose of this research study was to determine if augmenting DSP training with the use of simulation, debriefing, and written reflection, related to medication management would increase the skill-level and confidence of DSPs. Instruction modules for DSPs included an overview of medication administration, the use of insulin pen injections, and medication administration by gastro-intestinal method.

Healthcare Simulation

Simulation-based education is increasingly used in healthcare training alongside lecture, problem-based and team-based learning, clinical experience, and multimedia computer-based learning (Motola, et. al, 2013, p. e1512). Healthcare simulation ranges from basic technical skills task training for individual participants to representative scenario-based training of healthcare teams. Simulated environments create realistic learner-centered clinical situations in which participants engage in controlled, standardized, deliberate practice of a range of competencies without risking patient safety (Haji, 2015). Instructor facilitation across the entire simulation experience includes preparatory activities connecting the simulation to learning objectives, the use of physiological, environmental, and verbal cues during simulation, and post-event debriefing (Sittner, et. al, 2015, p. 296). Studies about self-efficacy and confidence relate positive outcomes in simulation (Durham, Cato, & Lasater, 2014, p. 367).

Debriefing

The process of debriefing following simulation has been identified as critical to optimizing learning through healthcare simulation (Jeffries, 2005; Sawyer, et. al, 2016). Debriefing is a facilitated reflective discussion, a process through which the participants reflect on their thought processes, actions, and emotional states during the simulation. Lasater (2007)

found that participants desired and highly valued feedback from peers and instructors. The discussion focuses on learning outcomes and application of knowledge to practice (Dreifuerst, 2009) and through debriefing participants develop and integrate insights from direct experience to improve later clinical performance (Rudolph, et. al, 2008).

Reflective Teaching Practices

Reflective practice has been a foundation for critical understanding in education, medicine, science, and the social sciences since Dewey (1933), Kolb (1984), and Schön (1991) to enable practitioners with understanding and improving both affective and professional experiences (Oelofsen, 2012). Reflective activities, be they through writing, feedback, discussion, or other modes, are now incorporated into most thoughtful educational processes to inform students and teachers about their respective knowledge. Reflection is viewed as a high impact practice that is essential to the health professions, especially medical education and nursing (Bulman, 2013; Mann et al, 2009). Kleinheksel (2014, e301) asserted that "Self-reflection by students is a critical component to learning complex and multifaceted content and is especially important in the development and assessment of clinical reasoning skills." Likewise, an Australian clinical training program found that "...there are theoretical bases to reasonably expect that reflective practice can reduce likelihood of failures in clinical reasoning for solving complex cases" (Mamede, Schmidt, & Rikers, 2006, p. 144 as cited in Edith Cowan University report). By adding reflective practices to DSP's training they are better prepared to treat patients. As important, the concerns and suggestions of frontline DSPs enhance effective practice in addition to briefings and simulations.

Simulation learning experiences combined with pre-briefing and debriefing have proved to be productive tools in the training of nursing students as well as allied health workers such as

direct service professionals (Cheng et al, 2016, 418-420; Dreifuerst, 2009, 111-112). DSPs are increasingly required to upgrade workplace skills. The use of reflective practice in addition to the pedagogical tools mentioned above have been shown to support learning (Rothgeb: 2008, 489).

The Method

The day long simulation held at the Indiana University School of Nursing at IUPUC Simulation Center created an intensive clinical experience for direct support professionals. The study was reviewed by the Southeast Indiana Simulation Consortium. The study was completed as purely an evaluative measure of the educational offering. No risk was involved to participants and no identifying information was collected. Therefore, ethical approval was determined not to be necessary. The one-group pretest-posttest design was chosen for this quasi-experiment. The pretest posttest design is appropriate for collecting pre-and post-intervention data (Polit and Beck, 2004) and measuring change within a group. The paired samples *t*-test was used for analysis.

The study measured the confidence of DSPs in medication management (including insulin pen injection) and gastrointestinal medication administration. Each session pretest posttest confidence Likert scale questionnaire consisted of the same 4 questions to measure the confidence of each DSP before and after the training session.

The study also measured the knowledge acquired by the DSPs by using the pretest posttest design. Each pre and post -test consisted of the same 5 questions for medication management/insulin pen injection, and the same eight questions for gastrointestinal medication administration. Twelve DSPs completed the sessions for a possible 60 correct answers for

medication management/insulin pen injections, and a possible 96 points for administering medications through a gastrointestinal tube.

Objectives of the Study

1. Increase the medication administration and management knowledge base of direct support professionals in order to provide safer medication practices for the intellectual and development disability population. Participants will be able to:
    a. Identify general safe medication administration and management principles
    b. Safely administer medications through a gastrointestinal tube
    c. Safely administer insulin using an injectable pen
2. Increase the confidence level of direct support professionals in the administration management of medications in the intellectual and developmental disability population.
3. Continue to generate discussion on the need to include simulation and debriefing exercises in current curriculums for direct support professionals; by partnering with schools of nursing.

Participants

The DSP participants were purposive volunteers selected from agencies supporting individuals with ID/DD. Participants gave written consent to participate in the study. The DSPs were certified in the State of Indiana's Living in the Community Medication Administration Curriculum. The DSPs were employed for less than one year in the field of ID/DD. Two different community provider agencies serving South-Central Indiana were included in this study. A total of twelve DSPs participated in the training with one leaving the medication management session. Twelve DSPs completed the confidence pretest posttest and eleven DSPs completed the knowledge pretest posttest questionnaires.

Study Implementation

The training began with introductions, pretesting on each topic, and a pre-flection exercise. All reflection trainings were instructed by a doctorate prepared English professor experienced in reflection writing practices. Session One 'Medication Administration in the IDD Population: It's Not Just Popping Pills!' This medication management overview provided the foundational education for the day long simulation training. The session was facilitated by a doctorate prepared registered nurse (RN) certified in developmental disabilities nursing. The training included a general overview of safe medication practices during the ordering, storing, and administering, of medications. Special attention was given to the unique challenges of administering medications to persons with intellectual and developmental disability. As examples, positioning needs, swallowing considerations, and monitoring for side-effects.

Detailed instruction on diabetes mellitus included types of diabetes, hypoglycemia, hyperglycemia, insulin, subcutaneous injections, and how to monitor blood glucose levels. Following the medication management didactic instruction, DSPs were educated on insulin sliding scales and the mechanics of using insulin pens. Didactic instruction was followed by a simulation application. Under the direction of a registered nurse, DSPs were provided a patient scenario. Each DSP had to choose the right dose of insulin from the sliding scale, dial the correct number of units, and then inject the insulin into the simulation mannequin using correct technique. A debriefing session was provided by a master's prepared simulation director, certified in debriefing strategies. Lunch time provided the opportunity for another reflection exercise. This activity allowed the DSPs to consider what the morning session, if anything, added to their knowledge.

Session Two 'Administering Medications through a G-Tube' was instructed by a bachelor's prepared RN, certified in developmental disabilities, who has extensive experience with gastrointestinal tube feedings and medication administration. The didactic portion of the session included types of tubes, how the type of tube impacts medication administration, the basics of administering medication through a gastrointestinal tube, the risk of aspiration, and how to identify a problem and seek assistance. A detailed step by step procedure was introduced by the RN to the DSP students. Following the didactic portion of the training, under the direction of the RN, each DSP had the opportunity to administer several medications through a gastrointestinal tube using a high-fidelity simulation mannequin. This session ended with a debriefing discussion and reflective writing exercise.

Quantitative Results

Pre-Post Test Results

The results of the study indicated increased knowledge of direct support staff to administer medications, inject insulin, and administer medications through a gastrointestinal tube as evidenced by improved post testing scores. Medication Management (including diabetes and insulin pen injections): statistically significant -4.5 ($p < .001$) for a sample of 11 (2 DSPs did not complete the post –test and left the training). Questions were as follows:

1. Describe the difference between Diabetes Mellitus Type 1 and Diabetes Mellitus Type
2. What is considered a normal AIC reading for a person who is diabetic?
3. Name 1 disadvantage to administering medication by the oral route
4. Name 1 cognitive/thinking skill that is necessary in order to pass medications safely
5. The six rights of medication administration are: the right dose, right medication, right person and right route and right documentation. There are 3 more. Can you name one of them?

Medication Management/insulin pen injections demonstrated an increase in knowledge of 36%. The mean pre-knowledge score was 2.27 and the mean post-knowledge score was 4.11, with a mean difference of 1.84, paired sample correlation of 0.67.

Gastrointestinal Medications: statistically significant -4.4 ($p < .001$) for a sample of 12. (1 DSP did not complete the post-test and left the training). Questions were true and false, and 1 multiple choice:

1. Positioning is not important when administering medications via g-tube

2. You notice John's medication record has a new order that reads: amoxicillin one (1) 100mg tablet by mouth 2 times a day for 10 days. John does not get any medication by mouth. You should do all of the following except:
    a. Notify your nurse or manager in the absence of a nurse
    b. Find the physicians order for that medication so you can compare it and share the information with the on-call person
    c. Go ahead and give because that is what the pharmacy sent and they know what they are doing.

3. You notice that the stoma for the individual you are administering medications has some yellow drainage and is more red than usual. You have a PRN for some bacitracin ordered so it is OK to use it and see what happens without notifying anyone.

4. Comparing medication labels with the MAR is essential in decreasing the risk for medication errors?

5. The individual begins to cough and now has some formula in his mouth when you are giving his medication. It is OK to finish the rest of the medications as they are already set up.

6. If the tube is clogged, you should add cola and force it in to unclog it?

7. Checking placement is not necessary for an individual who has had a g-tube for several years?

8. A Jejunostomy or "J" tube makes it easier to administer medications as it has a large diameter?

Administering medications through a gastrointestinal tube revealed an increase of 10% in pre-post testing scores. The mean pre-confidence score was 7 and the mean post-confidence

score was 7.83, with a mean difference of 0.83, paired sample correlation of 0.78. For both medication management and gastrointestinal medication administration a longitudinal test of knowledge is needed to determine if knowledge gained was sustained over time.

Table 1. Pre and Post Aggregate Knowledge Scores

Session Results: *Each session pre-post- test consisted of the same 5 questions (8 questions for the G-Tube pre-post). 12 DSPs completed the sessions for a possible 60 correct answers for each pre-posttest for* ***Medication Management/Insulin Pen Administration*** *and a possible 96 points* ***for Administering Medications via a G-Tube.***

Testing	Medication Management and Insulin Pen Administration	Administering Medications via a G-Tube		
Pre Correct	28 points out of possible 60	84 points out of possible 96		
Post Correct	* 45.25 out of possible 55	94 points out of possible 96		

*1 post-test was not completed

Table 2. Pre and Post Individual Knowledge Scores

DSP	Pre Med Management	Post Med Management	Pre G-Tube	Post G Tube
1	3	5	7	8
2	2.5	4	7	8
3	2	5	7	8
4	1	3.25	8	8
5	3	5	8	8
6	2.5	4	7	8
7	3	5	7	8
8	2	4	7	8
9	1	3	No data	No data
10	2	3.5	6	7
11	3	3.5	6	7
12	No data	No data	7	8

Confidence Level Results

Each session pre-post confidence scale consisted of the same questions to measure the confidence of each DSP before and after the training session: The outcome of this project was determined by evaluating the confidence level of DSPs by having the DSPs complete a 1-4 Likert scale questionnaire designed to measure their confidence following the completion of each didactic and simulation session. Pre-confidence scale: 1= very prepared, 2= prepared, 3=

somewhat prepared, 4= not prepared. Post confidence scale: 1= very prepared, 2= better prepared, 3= somewhat better prepared, 4= not better prepared. The questions were: 1. I feel I am prepared to efficiently/safely manage medication administration for persons with intellectual and developmental disability. 2. I feel I am prepared to efficiently/safely administer insulin flex pens for persons with intellectual and developmental disability. 3. I feel I am prepared to efficiently/safely administer medications by gastrointestinal tube for persons with intellectual and developmental disability.

It is noted a longitudinal test is needed to determine if an increase in confidence was sustained over time.

Table 3. Pre and Post Individual Confidence Scores

DSP	Pre Med Manag	Post Med Manag	Pre insulin pen	Post insulin pen	Pre G tube	Post G tube
1	2	2	2	2	2	2
2	2	1	2	1	2	1
3	2	1	2	1	4	2
4	2	1	4	2	2	2
5	1	1	1	1	4	3
6	2	1	3	1	2	1
7	1	1	1	1	3	2
8	1	1	1	1	2	1
9	1	1	4	1	1	1
10	2	1	2	1	2	1
11	1	1	1	1	4	2
12	1	1	3	2	4	3

Pre-Confidence: Medication Management (13 DSPs completed Pre-Confidence Scale, 1 DSP did not complete the training). Results: 2.8 ($p < .02$)

Pre-Confidence: Insulin Pen Injections (12 DSPs completed the Pre-Confidence Scale).

Results: 3.19 ($p < .01$)

Pre-Confidence: G Tube (12 DSPs completed the Pre-Confidence Scale).

Results: 4.75 ($p < .001$)

Table 4. Pre and Post Aggregate Confidence Responses

Medication Management	Pre	Post
I feel I am prepared to efficiently/safely manage **medication administration** for persons with intellectual and developmental disability	Very prepared =8 Prepared =5 Somewhat Prepared=0 Not Prepared=0	Very prepared =10 Better Prepared= 2 Somewhat prepared=0 Not Better Prepared=0
I feel I am prepared to efficiently/safely administer **insulin by flex pens** for persons with intellectual and developmental disability	Very prepared =4 Prepared =4 Somewhat Prepared =2 Not Prepared =2	Very prepared =9 Better Prepared =3 Somewhat Prepared=0 Not Better Prepared=0
I feel I am prepared to efficiently/safely administer **medications by G-Tube** for persons with intellectual and developmental disability	Very prepared =1 Prepared =6 Somewhat Prepared = 1 Not Prepared =4	Very prepared = 5 Better Prepared =5 Somewhat Prepared =2 Not Better Prepared

Qualitative Results

Qualitative analysis of the DSPs' three written reflections (morning pre-flection, lunchtime reflection, and final reflection) provided detailed insights into clinical methods, as well as rich affective narratives. In terms of practice, several DSPs reported that the simulations and conversations with trainers helped them understand the reasons for giving medications or following processes. They felt less like "just pill poppers": consequently more professionalized. DSPs wanted to know how the meds/tubes/pens related to the medical history of the patient. The questions not only showed the curiosity of the DSPs, but also the diversity of experiences that

each DSP brought to the training session. DSPs were curious about medical processes, causality and wanted to know what each medication does and why they are administering them. Their responses demonstrated an interest in system-level understanding of medication administration.

In the first morning Pre-flection the DSPs stated that they were satisfied with their previous employer training, though they had no comparison.

> *I received training at Anonymous Services in January of this year. Although the presentation was helpful, on the job training was more helpful to me. Actually being shown the process and doing hands on experience was the best training for me.*

> *The hands on training I received was the most helpful –reading about our meds and then doing hand on… I related to my job-1. Watching; 2. Assisting; 3. Doing; 4. Chatting about the med.*

When the DSPs were asked to compose a Lunch Reflection, their responses focused on their confidence levels since the morning activities. A few DSPs expressed that they preferred individualized hands-on training in the workplace rather than the simulations.

> *On a scale of 1 to 10, I would rate my confidence level at an 8. It would have been good if it would have been explained differences between regular syringes and the pen and I see a real pen and difference between a real pen and your pen.*

I am very confident. I have been working with insulin since I started at Anonymous. Though I didn't know that we were supposed to prime the insulin before giving it to the client.

I am confident I can do it now with no problem.

When the DSPs were asked in the Final Reflection about their skill level after the day's simulation training, the DSPs gave positive answers about their new skill levels.

I have seen a lot of G-tube feedings and meds given. I now have a little more insight as to why people get a G-tube implanted. Giving me things to look for in my clients [sic] health risks and overall wellness. I could learn a lot more information if the G-tube would ever become a function in my DSP position.

When the DSPs were asked in the Final Reflection at the end of the day if they benefitted from written reflection, they gave mixed answers. Trainees made little mention of reflection as a metacognitive tool. Several DSPs wondered about the purpose of reflection in DSP training:

If you write it you can retain it better.

Yes, it make you stop and think about why you just learned.

Yes before coming in here I've never seen a g tube or know the process

Yes, all the training was great. I learned a lot more with the gtube that I did not know

Sort of I guess I'm more if a visual/hands on person.

No. I personally do not learn very well through reflections.

Discussion:

DSPs are often the primary care provider for persons with IDD living in the community. Current DSP training methods and requirements are varied. DSP training may also lack clinical technique that helps to ensure safe medication practices. The need for enhanced clinical medication management skills for DSPs is driven by several factors. One, the increased number of persons with IDD now living in the community instead of institutions. Secondly, the unique and oftentimes complex medical diagnoses of this population require multiple classes of medications, further complicating medication administration. In addition, people with IDD are living longer, exacerbating the need for skilled DSPs who can navigate intricate medication management practices.

This study illuminates the need for enhanced DSP training. The study further highlights non-traditional educational methods such as simulation, reflection, and debriefing, may be useful in meeting the need for a more skilled DSP workforce. DSPs in the study expressed a desire for more in-depth knowledge related to medication management and a high level of commitment to the individuals they support. Further studies in the use of simulation, reflection, and debriefing are needed to explore the long-term benefits of such training.

Conclusion:

Based on pre and post testing results this study sought to determine if didactic instruction that included simulation, debriefing, and reflection exercises would increase the confidence and skill attainment of DSPs to manage medications, give insulin using injection

pens, and administer medications through gastro-intestinal tubes in the IDD population. The results of the study indicated using these methods may increase skill (-4.5, $p < 0.001$) and confidence level – (4.4, $p < 0.001$).

The DSPs reported a strong preference for hands-on transactional training with delivery systems, equipment, and medications that are available in their workplaces. The simulation provided a safe environment that encouraged discussion and questions, whilst debriefing and written reflection seemed to aid the teaching process. The DSPs in this simulation session seemed to be disinterested in writing and reflection. This may signal a need for more time dedicated in training sessions that explain the benefits of such exercises. It is possible that multiple reflective prompts can assist trainers in finding training gaps. For example, many DSPs reported 1) that they had never been told to prime the pens; and 2) or, how to use different pen styles that the simulation offered. The reflection prompts reveal the operating knowledge and feelings of the DSPs for a short time commitment. These responses help ensure that DSPs voices are taken into consideration for continued improvement in their education.

The increase in DSP skill and confidence is essential for safe and appropriate medication management for persons with IDD. DSPs administer medications to persons with IDD as an essential part of their care duties (NADSP). Although nurses are often responsible to ensure medication administration training for DSPs (Developmental Disability Nurses Association, 2008) monitoring of their skill performance is often lacking. Many times in community based settings medication management is provided with little professional nurse oversight creating a possible gap in clinical care (Medication Management Position Statement- Developmental Disability Nurses Association, 2008). Therefore, IDD nurses and people with IDD rely heavily on DSP's skills. In the United States, this transfer of professional nurse responsibility to an

unlicensed DSP is complex (DDNA, 2008). Most often this transfer of duty is outlined in the State Nurse Practice Act for Nurses. However, oftentimes IDD agencies are unaware of the nurses' scope of practice and how it aligns with nurse delegation of duties to DSPs. The American Nurses Association (ANA) has developed a position statement to help support nurses and organizations when delegating nursing tasks to unlicensed staff working with individuals with disabilities in community based settings (2014).

The need for enhanced training is not unique to the United States. Rubin, Merrick, Greydanus & Patel (2016) report concerns with DSP literacy and diverse training requirements are apparent worldwide. Rubin et al. also concur that persons with IDD globally have complex health issues that require a highly skilled DSP workforce. Enhanced training does face multiple challenges and funding may be the most significant. The cost of adding training hours and professionals to complete the training may act as a deterrent. However, this study has demonstrated that agencies can partner with schools of nursing to enhance training. Grants to help support this endeavor can be sought to help defer the cost to both agencies and schools of nursing.

Recommendations for Training of DSPs

Traditional didactic instruction proved to be valuable. Authors recommend this training strategy continue to be the initial phase of training. Providing foundational awareness related to medication administration in individuals with IDD is necessary to build upon the DSP's diverse existing knowledge. DSPs benefited from training that modeled what they experienced in the care setting. Simulation opportunities should offer DSPs situational, hands-on scenarios that provide continuity between the care setting, didactic instruction, the unique needs of persons with IDD, and best clinical practice.

Verbal reflection prompted the DSPs to compare previous medication abilities with newly gained best practices. Several DSPs noted a lack of detail in previous skill training. Their ability to make this comparison may prove to be a catalyst that prompts them to incorporate newly learned skills into their medication management practices in the care setting. Authors recommend that verbal reflection be incorporated into future training in order to extract valuable information related to DSPs previous training.

However, the authors found that most DSPs had little to no understanding of the benefits of reflective practice. DSPs preferred to "jump in" with "hands on" activities. DSPs voiced doubts about the utility about transferring reflective skills from their training to the workplace. This resistance is precisely the instinctual response that reflective practice seeks to curtail and replace by admitting discomfort, accepting ignorance, and articulating questions. Nursing and allied health research has strongly supported the benefits of reflective practice in areas such as the following: demonstrating learning, assisting learning, exploring (mis)conceptions, and strengthening a theory to practice arc. When reflecting on our own preparation of the one-day DSP training session, the authors saw some ways to improve the training. In future training sessions the authors may provide trainees with brief extracted readings (e.g. McClure) that contextualize the relevance of hands-on training, debriefing, and reflection. Also, authors may ask trainees to begin keeping a brief reflective diary *in anticipation,* that is, in the days before the training.

The authors also recommend a re-evaluation of skill attainment and confidence following the suggested initial training. A six month written test, and review of hands-on skills would help determine if skill level and confidence were sustained. The sustainability of these skills may

have a direct positive impact on accurate medication administration for persons with IDD. Better clinical skills may lead to improved healthcare outcomes for this population.

Finally, nurses and other professionals charged with training DSPs should partner with them to determine training needs. What subjects are lacking in their current training? What topics need further education? What teaching methods offer them optimal learning? What strategies help them to maintain the skills they learned during training sessions? This partnership may help close the gap between the knowledge healthcare professionals possess and the knowledge DSPs need.

Future Research:

Future studies should be conducted to address other forms of medication administration. DSPs frequently administer rectal medications for seizure control, inhaled medications for asthma, and epinephrine pens for allergic reactions. Therefore, studies focusing on various forms of medications should be considered for future research to validate the effectiveness of using didactic instruction, simulation, and reflection for a variety of medication administration practices.

Pre-education about reflective practices should be conducted prior to the enhanced training of didactic, simulation, and reflection. This may help to verify if a better understanding of reflective practices would encourage a more robust response from DSPS about their training experience.

Lastly*, s*tudies should be conducted after DSPs receive the enhanced training to ascertain if additional skills and confidence proved to stabilize the DSP workforce in the agencies who participated. Retaining DSPs who are knowledgeable may translate into improved medication administration and continuity of care for this population.

References

American Association on Intellectual and Developmental Disabilities. (2016). Position Statement; *Direct Support Professionals Workforce*. Retrieved from http://aaidd.org/news-policy/policy/position-statements/direct-support-professionals-(dsp)-workforce#.V_PutY8rKUk

American Nurses Association (2014*). Position statement support for nurse delegation to ensure the right of people with disabilities to live in the community*. Retrieved from: http://www.nursingworld.org/MainMenuCategories/Policy-Advocacy/Positions-and-Resolutions/ANAPositionStatements/Position-Statements-Alphabetically/Support-for-Nurse-Delegation-Ensure-Right-of-People-with-Disabilities-to-Live-in-the-Community.html

Bulman, C., & Schutz, S. (Eds). (2013). Reflective Practice in Nursing. (5th). Wiley-Blackwell.

Center for Medicaid and Medicare Services (2013). *Coverage of direct care workforce continuing education and training within Medicaid policy and rate setting.* Retrieved from https://www.medicaid.gov/medicaid-chip-program-information/by-topics/long-term-services-and-supports/workforce/downloads/dsw-training-rates-toolkit.pdf

Cheng, A., Grant, V., Robinson, T., Catena, H., Lachapelle, K., Kim, J., Adler, M., & Eppich, W. (2016, October). The promoting excellence and reflective learning in simulations (PEARLS) approach to health care debriefing: A faculty development guide. *Clinical Simulation in Nursing*, *12*:10, 419-428. http://dx.doi.org.10.1016/j.ecns.2016.95.002.

Developmental Disability Nurses Association. (2008). *Aspirational standards of developmental disabilities nursing practice.* DDNA: Texas

Developmental Disability Nurses Association. (2011). *Medication management: position statement*. Retrieved from: https://ddna.org/publications/medication-management/

Dewey, J. (1933). *How We Think*, New York: D. C. Heath.

Dreifuerst, K.T. (2009). The essentials of debriefing in simulation learning: A concept analysis. *Nursing Education Perspectives*, *30*:2, 109-114.

Durham, C. F., Cato, M. L., Lasater, K. (2014). NLN/Jeffries simulation framework state of the science project: Participant construct. *Clinical Simulation in Nursing, 10*:7, 363-372. doi: 10.1016/j.ecns.2014.04.002

Edith Cowen University Report: Interprofessional; learning through simulation. Reflective Practice: A tool to enhance professional practice. Ambulatory Care Program, Australia. 1-26. Retrieved from https://www.ecu.edu.au/__data/assets/pdf_file/0011/376958/User-Manual-Reflective-Practice-FINAL.pdf

Haji, F. A. (2015). *Advancing theory in healthcare simulation instructional design: The effect of task complexity on novice learning and cognitive load* (Unpublished doctoral dissertation). University of Toronto, Toronto.

Indiana Bureau of Developmental Disabilities (2011). *Requirements and training of direct support staff.* Retrieved from https://secure.in.gov/fssa/files/Requirements_Training_of_Direct_Support_Professional_Staff.pdf

Jeffries, P. R. (2005). A framework or designing, implementing, and evaluating simulations used as teaching strategies in nursing. *Nursing Education Perspectives, 26*:2, 96-103.

Kleinheksel, A.J. (2014). Transformative learning through virtual patient simulations: Predicting critical student reflections. *Clinical Simulation in Nursing, 10*: e301-e308.

Kolb, David A. 1984. Experiential Learning: Experience as the Source of Learning and Development. Prentice-Hall, Inc., Englewood Cliffs, N.J.

Lasater, K. (2007). High-fidelity simulation and the development of clinical judgement: Students' experiences. *Journal of Nursing Education, 46*, 269-276.

Mamede, S., Schmidt, H., & Rikers, R. (2006). Diagnostic errors and reflective practice in medicine. Journal of Evaluation in Clinical Practice, 13(5), 138-145.

Mann, K., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: a systematic review. *Advances in Health Sciences Education: Theory and Practice*, *14*(4), 595–621.

McClure, P. (n.d.) Reflection on Practice. University of Ulster. Accessed on 5/8/2017. file:///C:/Users/kwills/Desktop/8_Reflection%20in%20Practice%20(1).pdf

Motola, I., Devine, L. A., Hyun C. S., Sullivan, J. E., & Issenbertg, S. B. (2013). Simulation in healthcare education: A best evidence practical guide. *AMEE Guide No. 82, Medical Teacher, 35*:10, e1511-e1530. doi: 10.3109/0142159X.2013.818632

National Alliance for Direct Support Professionals. (n.d.). *15 NADSP Competencies* Retrieved from https://www.nadsp.org/images/NADSP_Competency_Areas.pdf

National League for Nursing (2015). *A vision for teaching with simulation.* Position Paper retrieved from http://www.nln.org/docs/default-source/about/nln-vision-series-(position-statements)/vision-statement-a-vision-for-teaching-with-simulation.pdf?sfvrsn=2

Oelofsen N. (2012). Using reflective practice in frontline nursing. *Nursing Times*, *108:*24, 22-24. Retrieved from https://www.nursingtimes.net/home/courses/using-reflective-practice-in-frontline-nursing/5045779.fullarticle

Pershing, J., Stork, B. (2004). Living in the community: medication administration manual. Education and Training Resources, School of Education, Indiana University.

Polit, D., Beck, C. (2004). Nursing research: principles and methods. Lippincott. Williams,& Wilkins: Philadelphia, PA

Rothgeb, M.K. (2008). Creating a Nursing Simulation Laboratory: A literature review. *Journal of Nursing Education*, *47*:11, 489-494.

Rubin, L., Merrick, J., Greydanus, D., Patel, D. (2016). *Healthcare for people with intellectual and developmental disability across the lifespan.* Springer: Switzerland

Rudolph, J. W., Simon, R., Raemer, D. B., & Eppich, W. (2008). Debriefing as formative assessment: Closing performance gaps in medical attention. *Academic Emergency Medicine 15:*1110-1116. doi: 10.1111/j.1553-2712.2008.00248.x

Sawyer, T., Eppich, W., Brett-Fleegler, M., Grant, V., & Cheng, A. (2016). More than one way to debrief: A critical review of healthcare simulation debriefing methods. *Simulation in Healthcare: Journal of the Society for Medical Simulation, 11*:3, 209-217.

Schön, D. A. (1991). *The Reflective Turn: Case Studies In and On Educational Practice*, New York: Teachers Press, Columbia University.

Sittner, B. J., Aebersold, M. L., Paige, J. B., Graham, L. L. M., Parsons Schram, A., Decker, S. I., & Lioce, L. (2015). INACSL standards of best practice for simulation: Past, present, and future. *Nursing Education Perspectives, 36*, 294–298. doi: 10.5480/15-1670

United States Department of Health and Human Services (2006*). The supply of direct support professionals serving people with intellectual and other developmental disabilities: report to congress.* Retrieved from:

https://aspe.hhs.gov/basic-report/supply-direct-support-professionals-serving-individuals-intellectual-disabilities-and-other-developmental-disabilities-report-congress#current

Wark, S., Hussain, R., Edwards, H. (2014). The training needs of staff supporting individuals ageing with intellectual disability. *Journal of Applied Research in Intellectual Disabilities, 27, 273-288*